

WHAT IS CLAIMED IS:

1. An absorbent composition for absorbing an aqueous salt solution, the absorbent composition comprising an ionic superabsorbent polymer material and an absorbency-enhancing additive in a weight ratio of at least about 1:1, 5 the additive having a dipole moment greater than about 1.85 Debye and a molecular weight of no more than about 10,000 grams/mole, the additive being capable of forming a zwitterion in the aqueous salt solution at a pH of from about 1 to about 9.
2. The absorbent composition as set forth in claim 1 wherein the ionic superabsorbent polymer material comprises an anionic polymer.
3. The absorbent composition as set forth in claim 2 wherein the anionic polymer is selected from the group consisting of acrylate based polymers and sulfonate based polymers.
4. The absorbent composition as set forth in claim 2 wherein the anionic polymer comprises poly(acrylic acid).
5. The absorbent composition as set forth in claim 1 wherein the ionic superabsorbent polymer material comprises a cationic polymer.
6. The absorbent composition as set forth in claim 5 wherein the cationic polymer comprises a polyamine based polymer.
7. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive has a dipole moment of at least about 5 Debye.

8. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive has a dipole moment of at least about 10 Debye.

9. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive has a molecular weight of no more than about 5,000 grams/mole.

10. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive has a molecular weight of no more than about 1,000 grams/mole.

11. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive has a molecular weight of no more than about 100 grams/mole.

12. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive is an amino acid.

13. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive is a sulfonic acid analog of an amino acid.

14. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive is a phosphonic acid analog of an amino acid.

15. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive is selected from the group consisting of glycine, alpha-alanine, beta-alanine, betaine, and taurine.

16. The absorbent composition as set forth in claim 1 wherein the absorbency-enhancing additive is glycine.

17. The absorbent composition as set forth in claim 1 wherein the weight ratio of ionic superabsorbent polymer material to absorbency-enhancing additive is at least about 1:2.

18. The absorbent composition as set forth in claim 1 wherein the weight ratio of ionic superabsorbent polymer material to absorbency-enhancing additive is at least about 1:3.

19. The absorbent composition as set forth in claim 1 wherein the composition is capable of absorbing at least about 10 times its dry weight of the aqueous salt solution, the aqueous salt solution having a salt concentration of about 0.9% (by weight).

20. The absorbent composition as set forth in claim 1 wherein the absorbent composition comprises from about 5% (by weight) to about 99% (by weight) of ionic superabsorbent polymer and absorbency-enhancing additive and from about 1% (by weight) to about 95% (by weight) fluff fiber.

21. The absorbent composition as set forth in claim 1 wherein the absorbent composition is incorporated into a product selected from the group consisting of diapers, training pants, feminine napkins, interlabial pads, tampons, wound management products, and adult incontinence garments.

22. An absorbent composition for absorbing an aqueous salt solution, the absorbent composition comprising poly(acrylic acid) and an absorbency-enhancing additive, the absorbency-enhancing additive having a dipole moment of at least about 10 Debye, a molecular weight of no more than about 100 grams/mole and being capable of forming a

zwitterion in the aqueous salt solution at a pH of from about 1 to about 9, the weight ratio of poly(acrylic acid) to absorbency-enhancing additive being at least about 1:2.

23. The absorbent composition as set forth in claim 22 wherein the absorbency-enhancing additive is glycine.

24. The absorbent composition as set forth in claim 22 wherein the aqueous salt solution is selected from the group consisting of urine, blood, and menses.

25. The absorbent composition as set forth in claim 22 wherein the absorbent composition is incorporated into a product selected from the group consisting of diapers, training pants, feminine napkins, interlabial pads, tampons, wound management products, and adult incontinence garments.

26. The absorbent composition as set forth in claim 22 wherein the absorbent composition comprises from about 5% (by weight) to about 99% (by weight) of ionic superabsorbent polymer and absorbency-enhancing additive and from about 1% (by weight) to about 95% (by weight) fluff fiber.

27. A process for increasing the osmotic activity of an ionic superabsorbent polymer material in the presence of an aqueous salt solution, the process comprising combining an absorbency-enhancing additive with the ionic superabsorbent polymer material prior to contacting the ionic superabsorbent polymer with the aqueous salt solution, the weight ratio of the ionic superabsorbent polymer to the absorbency-enhancing additive being at least about 1:2, the additive having a dipole moment greater than about 1.85 Debye and a molecular weight of no more than about 10,000 grams/mole, the additive being capable of

forming a zwitterion in the aqueous salt solution at a pH of from about 1 to about 9.

28. The process as set forth in claim 27 wherein the ionic superabsorbent polymer comprises an anionic polymer.

29. The process as set forth in claim 28 wherein the ionic superabsorbent polymer is selected from the group consisting of acrylate based polymers and sulfonate based polymers.

30. The process as set forth in claim 29 wherein the ionic superabsorbent polymer comprises poly(acrylic acid).

31. The process as set forth in claim 27 wherein the ionic superabsorbent polymer comprises a cationic polymer.

32. The process as set forth in claim 31 wherein the ionic superabsorbent polymer comprises a polyamine based polymer.

33. The process as set forth in claim 27 wherein absorbency-enhancing additive has a dipole moment of at least about 5 Debye.

34. The process as set forth in claim 27 wherein the absorbency-enhancing additive has a dipole moment of at least about 10 Debye.

35. The process as set forth in claim 27 wherein the absorbency-enhancing additive has a molecular weight of no more than about 5,000 grams/mole.

36. The process as set forth in claim 27 wherein the absorbency-enhancing additive has a molecular weight of no more than about 500 grams/mole.

37. The process as set forth in claim 27 wherein the absorbency-enhancing additive has a molecular weight of no more than about 100 grams/mole.

38. The process as set forth in claim 27 wherein the absorbency-enhancing additive is an amino acid.

39. The process as set forth in claim 27 wherein the absorbency-enhancing additive is a sulfonic acid analog of an amino acid.

40. The process as set forth in claim 27 wherein the absorbency-enhancing additive is a phosphonic acid analog of an amino acid.

41. The process as set forth in claim 27 wherein the absorbency-enhancing additive is selected from the group consisting of glycine, alpha-alanine, beta-alanine, betaine, and taurine.

42. The process as set forth in claim 27 wherein the absorbency-enhancing additive is glycine.

43. The process as set forth in claim 27 wherein the weight ratio of ionic superabsorbent polymer to absorbency-enhancing additive is at least about 1:3.

44. The process as set forth in claim 27 wherein the weight ratio of ionic superabsorbent polymer to absorbency-enhancing additive is at least about 1:4.

45. The process as set forth in claim 27 wherein the ionic superabsorbent polymer is incorporated into a product selected from the group consisting of diapers, training pants, feminine napkins, interlabial pads, tampons, wound management products and adult incontinence garments.

46. The process as set forth in claim 27 wherein the ionic polymer comprises poly(acrylic acid) and the additive has a dipole moment of at least about 10 Debye and a molecular weight of no more than about 1000 grams/mole, the weight ratio of ionic superabsorbent polymer to absorbency-enhancing additive being from about 1:1 to about 1:2.

47. The process as set forth in claim 27 wherein the additive is introduced onto the ionic superabsorbent polymer material by contacting superabsorbent polymer granules suspended in a fluidized bed with an aqueous spray containing the additive and evaporating water.

48. A composite product for absorbing an aqueous salt solution, the product comprising an absorbent composition comprising an ionic superabsorbent polymer material, fluff fiber, and an additive, the weight ratio of the ionic superabsorbent polymer to the absorbency-enhancing additive being at least about 1:2, the additive having a dipole moment greater than about 1.85 Debye and a molecular weight of no more than about 10,000 grams/mole, the additive being capable of forming a zwitterion in the aqueous salt solution at a pH of from about 1 to about 9.

49. The composite product as set forth in claim 48 wherein the additive is contained in or on the ionic superabsorbent polymer material.

50. The composite product composition as set forth in claim 48 wherein the additive is contained in or on the fluff fibers.

51. An absorbent composition for absorbing an aqueous salt solution, the absorbent composition comprising an ionic superabsorbent polymer material and an absorbency-

enhancing additive, the additive being present in the
 5 composition in an amount sufficient to produce a mole
 fraction of at least about 0.01 of the additive in the
 aqueous salt solution, the additive having a dipole moment
 greater than about 1.85 Debye and a molecular weight of no
 more than about 10,000 grams/mole, the additive being
 10 capable of forming a zwitterion in the aqueous salt
 solution at a pH of from about 1 to about 9.

52. The absorbent composition as set forth in claim 51
 wherein the mole fraction of absorbency-enhancing additive
 is at least about 0.02.